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Possibilities in Anaemia Prevention during Pregnancy through the Basic Health Care System

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Abstract: *In case of pregnancies, one of the most common pathological conditions in internal medicine is aneamia with iron-deficiency. Furthermore, iron deficiency may also affect the mother and the fetus negatively. We wanted to find out which group of expectant mothers are mostly affected, which factors influence the development of aneamia. It was also observable in the case of those living at higher living standards that they take fetus-protecting vitamins with a significantly higher frequency before the pregnancy than those living at lower living standards. According to our research data, 67% of the sample developed aneamia. In our research the risk group consisted of young, vegetarian expectant mothers with low education and the multiparas. After conception, the timing of gynaecological consultation was appropriate and the majority of the sample had a clear idea of the ways of preventing aneamia. However, prevention was only realized in practice - based on the criteria - only with a frequency of 12%. It would be important to consciously plan pregnancy. After taking expectant mothers into care, they should - as soon as possible - be screened for the deficiency and in need, supplements should be started. Risk groups should be given greater attention. In their case, a routine supplement of iron would be desirable even before the development of a deficiency. During pregnancy care, awareness must be raised and an iron-rich diet should be established at the beginning. Beyond these, general practitioner, health visitors have the opportunity - through the close relationship with the expectant mothers - to control laboratory tests, provide appropriate information, recommend vitamin preparations as well as check taken medications.*

Keywords: aneamia, pregnancy, fetus-protecting vitamin, prevention

Introduction and Aim

Anaemia is one of the most frequently occurring pathological abnormalities in internal medicine (97-98%) in case of gravidas. During pregnancy folic acid deficient anaemia may occur, which is a mere 2-3%, while the B12 vitamin caused anaemia can only be expected in part per thousand (Szerafin & Jakó, 2010).

Anaemia can have serious short term and long term result on mothers as well as on the embryo/fetus such as habitual miscarriage, intrauterine atrophy, placenta abruptio, low natal weight, different disturbance of development. Iron-deficient anaemia can set the child back in psychomotor development, but it has negative effect on motor activities, behavior, cognitive functions and on neurological development as well (Hajnáczky, 2010). Majority of women suffer from pre-pregnancy iron-deficiency and this deficiency accelerates physiological iron storage decrease during pregnancy. Those expectant mothers will not have mobilizable iron stores during their delivery who suffer from deficiency and they receive inadequate treatment. Moreover, the foetal iron stores are filled up during the last weeks of the pregnancy. Therefore those expectant mothers, who suffer from iron deficiency, will deliver their new born children with minimal stored iron level (Hajnáczky, 2002).

Since the above mentioned chronic conditions occur as a result of deficiency, at first it would be required to emphasize not only the treatment but the preventive actions as well. That is the reason why we deal with this frequently occurring issue in practice. Our research primarily seeks to find which expectant mothers are affected the most. Furthermore, this paper also seeks to find what conditions have effect on the development of the anaemia, also to estimate occurrence of deficiency within a randomly selected group. Moreover, the research aims to measure how mothers prepare themselves for the pregnancy and in what degree this consciousness affects the occurrence of anaemia. Finally, we examined what anaemia prevention methods are applied by the expectant mothers most preferably.

Material and method

The data source was provided for the analysis by seven districts of health visitors operating in and around the town of Veszprém. The basis of the research consists of not randomly, purposely, specialists selected expectant mothers (Pakai & Kíves, 2013), who are registered by their health visitors. Those expectant mothers were excluded from the sample who were taken to a department of gynecology and pregnant pathology for continuous monitoring due to some health related issues. Data is collected from 38 self-edited questionnaires with closed question. The primary results of the qualitative, descriptive, cross-sectional research are provided by the 109 completed questionnaires between August 2013 and January 2014. The main set of questions focused on the socioeconomic status, and

the pregnancy, health related behavior. Within the descriptive statistics, we calculated frequency, which was presented with confidence interval. Defining the relation between the two variants, we calculated Chi^2 probability, the significance level was $p<0,05$. We used Microsoft Excel 2007 to calculate the statistic data.

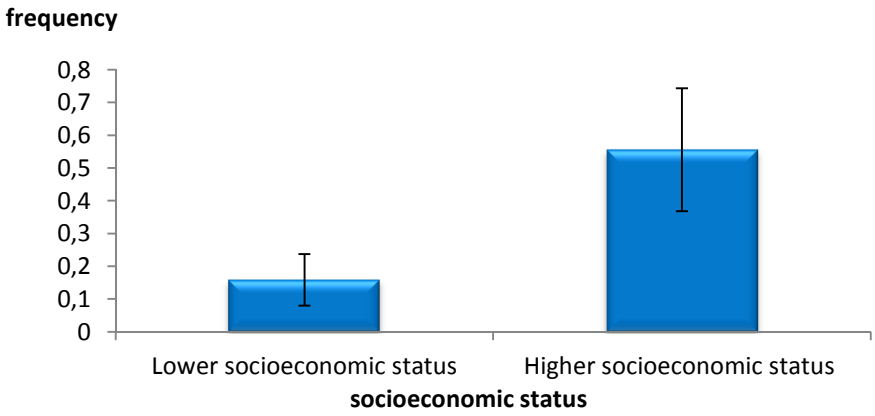
Results

We presumed that preparation for pregnancy is represented in higher proportion with higher socioeconomic status than those with lower socioeconomic status. In terms of socioeconomic factors, those were classified into higher socioeconomic group who possessed a permanent job, lived in an apartment/house, used their own vehicle, possessed a personal computer/laptop, regularly went on holiday, attended cultural events and their monthly income, according to the given response in questionnaire, was between HUF 150.000 and HUF 300.000 or more. (n=27) We classified those into lower socioeconomic status group who did not possess a job, lived in a rent, did not possess IT equipments, did not have the opportunity to went on holiday, attended cultural events and their monthly income was between HUF 150.000HUF and HUF 70.000 or less. (n=82)

Those prepared themselves consciously for pregnancy, according to the responses, who pre-planned their pregnancies, visited their gynecologists within one or two weeks after their assumed pregnancy, then they visited their health visitors within one or two weeks after their pregnancies were confirmed. Before conception, they had already taken folic acid, foetus protecting supplements, and/or iron. (n=28)

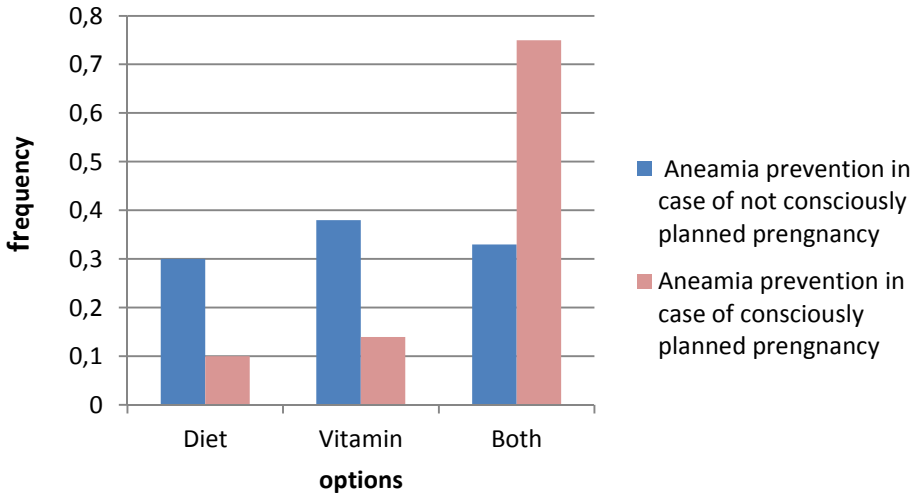
In the course of our research, 15.58% of the respondents with lower socioeconomic status prepared consciously for pregnancy as opposed to the 55.55% of the respondents with higher socioeconomic status (i.e. Chart 1). With the help of chi2 probability, we have found significant difference (21.09; $p<0.01$). Therefore, we can conclude that a higher living standard determines pre-planned pregnancy. We compared our research result to the research results of Tamás Bödecs and his colleagues which was published in 2010, where 75% of sample prepared consciously for pregnancy and their socioeconomic status was significantly higher (Bödecs et al., 2010).

Chart 1. Division of the sample's socioeconomic status in relation to conscious preparation for pregnancy (n=109)



Preferable anaemia prevention methods were also examined within the two groups: those gravidas who consciously prepare for their pregnancy and those how do not. We presumed that those who consciously prepared for their pregnancy prefer changing their dietary habits to taking vitamin supplements. In the course of the research, we concluded that, those gravitas who consciously prepared for having children, in most cases, prefer both preventive actions compare to the other group where we calculated 32% frequency in adapting simultaneously both methods; changing dietary habits and taking vitamin supplements as a preventive actions. (Chart 2) Those, who consciously prepared for having children, are also more conscious later during their pregnancy regarding anaemia prevention. Besides dietary factors, they have changed their vitamin supplements taking habits.

Chart 2. Division of expectants' response in relation to anaemia prevention (n=108)



Regarding anaemia, we planned to calculate from the sample, the number of expectant mothers who endeavor to prevent anaemia. According to the responses of the questionnaire, those were classified into

the group who targeted anaemia prevention, who had explicit information on preventing anaemia and preferred both preventive actions: changing nourishment and taking supplements. They have also taken iron, folic acid, and prenatal vitamins before and during pregnancy. They took these supplements before pregnancy and after the maternity certificate issued. Some of them had already changed their eating habits before their maternity certificates were issued. 12% of the samples, 13 persons total, were included into this category. 9 out of the total were primigravidas, the remaining 4 were multigradvidas. According to our survey, it is proved that primigravidas pay increased attention to anaemia prevention compare to multigravidas. Calculating Chi^2 probability on variables, during the examined assumption, we found significant differences between the number of pregnancies and the endeavor to prevent anaemia (9.14; $p<0.01$). As a conclusion, primigravidas were indeed in higher proportion who endeavor to prevent anaemia as opposed to mutigravidas.

Several researches have proved that folic acid intake itself does not begin before but after praegnatio. Folic acid intake is essential in case of certain developmental abnormalities (Czeizel, 2012). 20% frequency is shown in our examined sample in terms of folic acid intake before pregnancy in case of primigravidas and multigravidas. Furthermore, similarly to the above mentioned domestic examination the frequency of folic acid intake is decreased to 7% regarding multiple pregnancies. In our research, there was a 74% increase in folic acid intake in case of primiparas and multiparas, during their first pregnancies. There was a further increase of 83% in folic acid intake in case of the last pregnancies of multiparas while Márta Bognár and her colleagues measured, during their 2006 research, 69% frequency in regular folic acid intake of Hungarian gravidas (Bognár et al., 2006).

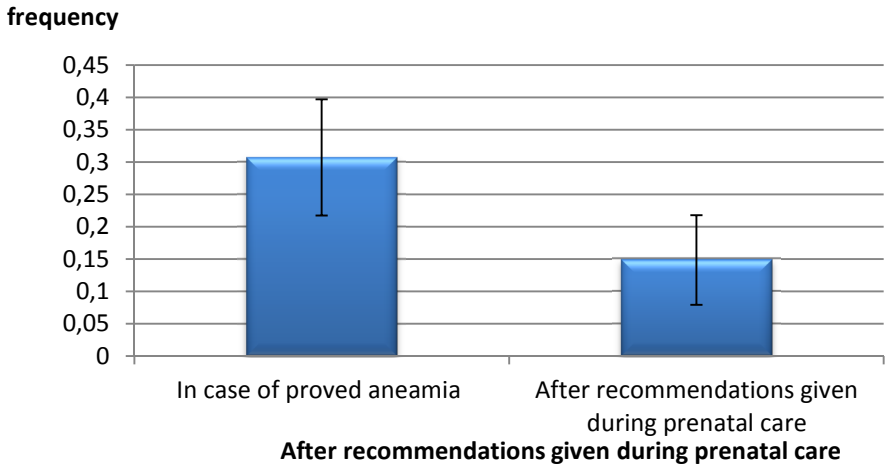
Examining gravidas with high socioeconomic status, 21 out of 27 persons, i.e. 78%, took prenatal vitamins before pregnancy. Among those with lower socioeconomic status this number was 22 out of 82 persons, i.e. 27%. As a conclusion, there was a significant difference (chi2 probability $p<0.01$). People with higher living standards more frequently apply prenatal vitamin intake.

We aimed at revealing how gravidas arrive to a decision on certain supplements. Whether their decision depends on the price of the supplement, the recommendations of the medical specialists, the recommendations of the health visitors or the ingredients of the supplement is determinant. Regarding this question, we were provided with 141 responses to multiple choice questions. After processing the responses, the most determinant factor is the recommendations of the specialists with 46 markings i.e. in decision making, it is determinant in 33%. The second most important factor, following the recommendations of the specialists, was the vitamin ingredients of the supplement according to the description of the supplement. We were provided with 28 responses. It was followed by the recommendations of health visitors with 24 responses. According to our results, the price of the supplement was the least important factor during the decision making process, we were provided with 10 responses all together. 18 responses were provided for other reasons for deciding on a supplement. The dominance in professional

aspects of the gravidas choice can be seen as opposed to other secondary external affecting factors (effect of media, value for money).

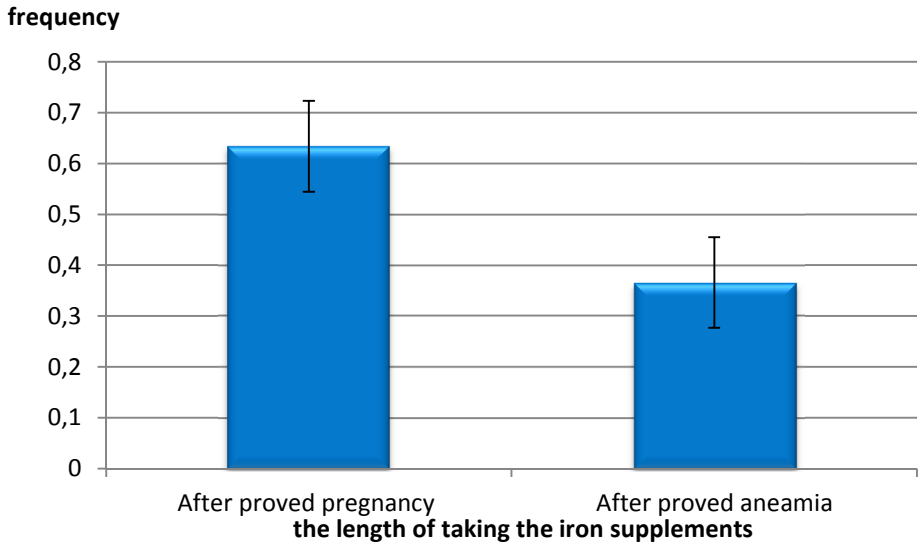
We inquired the gravidas when they would change their dietary habit for avoiding anaemia. On the basis of the results, most of them, with 28% frequency, would change their nourishments after they would be aware of the fact that they had iron-deficiency. 24% would do it before pregnancy; apparently, it could only occur in case of planned pregnancy. On the basis of the responses 20% after maternity certificate and 14% would act in accordance with the recommendation given during prenatal care. 5% would change after being informed that another condition of deficiency (vitamin B12, folic acid) had developed in their system. In this current research, such response has not occurred. Further 9% of the respondents would not change anything at all. It means that they ignore the role of nutrition in prevention or they would not change since they follow adequate dietary habits. On the basis of the result the conclusion can be drawn that the respondents more often (28%) (CI 0.21-0.39) change their dietary habit only after the anaemia is confirmed, and even less (14%) (CI 0.079-0.21) rely on the prenatal care specialists (Chart 3).

Chart 3. The expectant mothers dietary habits change in relation to the examined factors (n=101)



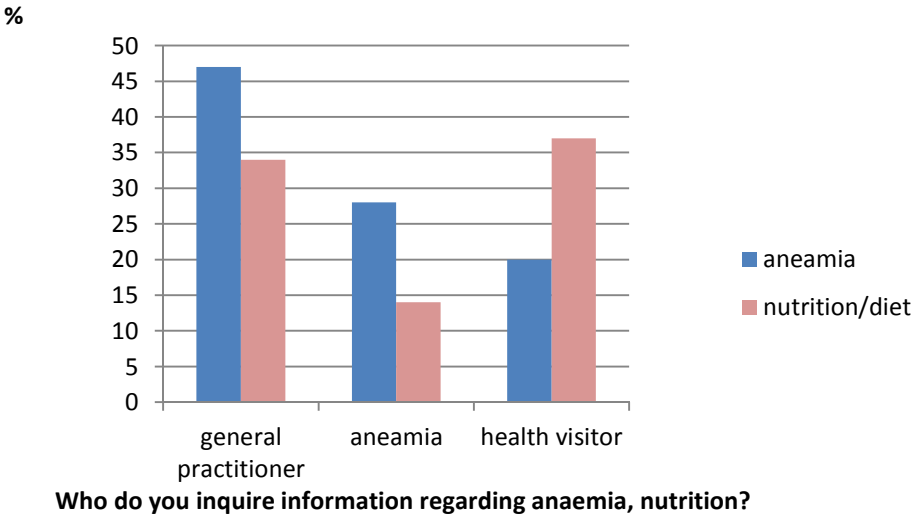
We assumed that the gravidas began iron supplement intake after their gynecologist confirmed pregnancy, not after their anaemia was confirmed by laboratory results, which we presented this with 95% confidence interval. 63% began vitamin supplement intake after the gynecologist confirmed pregnancy (CI 0.54-072), while 37% of the sample (CI 0.27-0.45) begin the supplements intake after a laboratory confirmed anaemia. (Chart 4)

Chart 4. Starting time of iron supplement intake (n=109)



We examined who the expectant mothers preferably turn to during pregnancy. On the basis of our results regarding anaemia, expectant mothers primarily inquire their general practitioners (47%), then the gynecologists (28%), and finally the health visitors (20%). In terms of nutritional inquiries, the respondents primarily rely on the recommendation of their health visitors (37%), then the recommendation of their general practitioners (31%), and finally the recommendation of their gynecologists (14%). Chart 5 shows that the expectant mothers inquire about the issues and prevention of anaemia for their general practitioners but in case of dietary issues the role of the health visitors is significant.

5. chart. Division of information inquiry regarding anaemia and nutrition (n=109)



Summary

On the basis of academic literature and the results of researches, young gravidas (Bencaiova et al., 2012; Bergmann et al., 2010; Szerafin & Jakó, 2010), with low socioeconomic status (Szerafin & Jakó, 2010), multigravidas (Bencaiova et al., 2012; Bergmann et al., 2010; Szerafin & Jakó, 2010), and gravidas with vegetarian dietary habits (Polyák et al., 2012) are particularly exposed to anaemia during pregnancy. In our examined sample, the above mentioned groups are also categorizes into the group which is vulnerable to development of anaemia. Anaemia develops, in case of young with a frequency of 88%, and those with lower academic background, the frequency is 81%. Anaemia develops significantly more frequently during pregnancy in case of multigravidas as well. Anaemia develops equally in case of primiparas and multiparas during the second or third trimester according to the responses given by the respondent gravidas in our research. During the last pregnancies of multiparas, it was more frequent during the second trimester. Gravidas following vegan diet, the chance of developing anaemia is significantly higher. In our small sample size research, 8 out of 9 vegetarian expectant mothers reported to have anaemia during their pregnancy. 7 out of 9 finished but the remaining two have not changed anything in their diet. Regarding nutrition, two of them relied on the advice of their health visitors and two of them that of their general practitioners. Five of them reported that they did not rely on anybody in this subject-matter.

During prenatal care, it is very important to pay extra attention to the above mentioned risk groups. The time of the visits to gynecologists and health visitors were as required within the examined sample. Few of them, however, prepared for their pregnancy (25.6%) and only a small number (12%) in the sample group endeavored prevention, contrary to the fact, that they were aware of the possible prevention methods (79%). Although the respondents reported that iron-deficiency occurred in a small percentage before pregnancy, there is likelihood that the systems of expectant mothers were not adequately prepared due to the lack of positive family planning and prevention. Consequently, anaemia could develop during pregnancy in 67% according to results given by the respondents own admission. The provided responds show that the expectants mothers rather change their diets after their anaemia is confirmed, and they less likely to engage themselves to recommendations given during prenatal care. While gravidas use iron supplements by medical recommendation from the detection of their gravidity before medically proved anaemia, the aim would be that a larger proportion of gravidas plan their pregnancy consciously. Since it is difficult to have influence on this in the light of the known results, during prenatal care, effort should be made in terms of anaemia prevention to achieve greater efficiency, in which the health care system has significant role based on our results.

Conclusion

According to the results obtained, the following conclusions can be drawn: Conscious planning of a pregnancy would be important. Similarly to the conclusions of other domestic researches the proposed solution is an early prenatal care registration where the deficiency of expectant mothers can be screened and supplementation could begin at an early stage according to the needs. Regarding the risk groups, iron supplementation can be carried out routinely, preferably before the development of anaemia. It is necessary during prenatal care to raise attention to the adequate iron rich diet and shape the diet accordingly. Furthermore, due to the close relation with the gravidas, there is opportunity to continuous control of laboratory results, proper orientation and information sharing, recommendation of vitamin supplements as well as checking the medication.

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